

BACK-UP STEERING SYSTEM FOR TRACK LAYING VEHICLES

Abstract of the Disclosure

A back-up steering system is provided having a hydraulic pump, an accumulator, a mode control valve, a main solenoid valve, and a pair of back-up solenoid valves. The system is connected, to left and right service brakes. The hydraulic pump and the accumulator are both connected to a main hydraulic line. The main solenoid valve is connected to the main line, a common fluid sump, and the mode control valve. The back-up solenoid valves are each connected to the main line, the sump and the mode control valve. The service brakes are connected to the mode control valve. During normal operation the mode control valve is set so that the service brakes are in fluid communication with the mode control valve and the main solenoid valve. When the main solenoid valve is actuated the pump is in fluid communication with both service brakes for simultaneous actuation thereof, in response to operator induced braking. At this time the back-up solenoid valves are disconnected from the service brakes due to the position of the mode control valve. During back-up or emergency operation the mode control valve is set so that the service brakes are in fluid communication with the mode control valve and the back-up solenoid valves. The service brakes are selectively brought into fluid communication with the pump and/or accumulator via selective actuation of the back-up solenoid valves. By selectively actuating either the left or right service brake the vehicle can be steered even though the primary steering system is not functioning properly. At this time the main solenoid valve is effectively disconnected from the service brakes due to the position of the mode control valve. Electrical input to the various valves of the system is provided by the vehicle alternator and in the event of alternator failure, the valves are powered by the vehicle battery. Hydraulic fluid pressure is provided under normal conditions by the hydraulic pump and in the event of pump failure, the accumulator acts as a back-up to provide fluid pressure to the system.